JSMICRO SEMICONDUCTOR

BTA208S-600F

GENERAL DESCRIPTION

Passivated guaranteed commutation triacs in a plastic envelope suitable for surface mounting, intended for use in motor control circuits or with other highly inductive loads. These devices balance the requirements of commutation performance and gate sensitivity. The "sensitive gate" E series and "logic level" D series are intended for interfacing with low power drivers, including micro controllers.

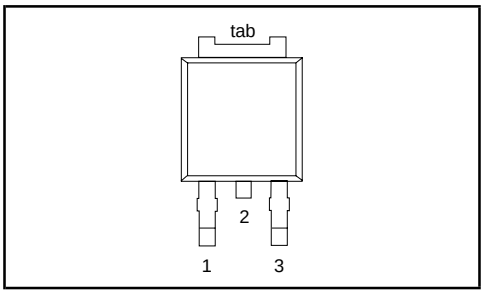
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	UNIT
	BTA208S-	**600D**	**-**	
	BTA208S-	**600E**	**800E**	
	BTA208S-	**600F**	**800F**	
V_{DRM}	Repetitive peak off-state voltages	600	800	V
$I_{T(RMS)}$	RMS on-state current	8	8	A
I_{TSM}	Non-repetitive peak on-state current	65	65	A

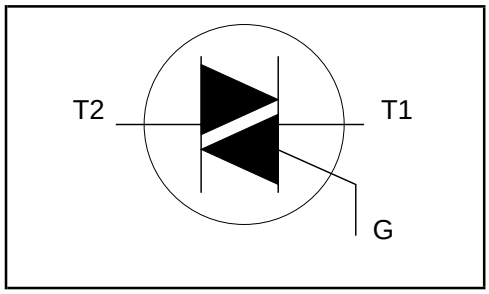
PINNING - TO252

PIN NUMBER	Standard S
1	MT1
2	MT2
3	gate
tab	MT2

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.		UNIT
				-600	**-800**	
V_{DRM}	Repetitive peak off-state voltages		-	600[1]	800	V
$I_{T(RMS)}$	RMS on-state current	full sine wave; $T_{mb} \leq 102$ ˚C	-	8		A
I_{TSM}	Non-repetitive peak on-state current	full sine wave; $T_j = 25$ ˚C prior to surge				
		t = 20 ms	-	65		A
		t = 16.7 ms	-	72		A
I^2t	I^2t for fusing	t = 10 ms	-	21		A^2s
dI_T/dt	Repetitive rate of rise of on-state current after triggering	I_{TM} = 12 A; I_G = 0.2 A; dI_G/dt = 0.2 A/µs		100		A/µs
I_{GM}	Peak gate current		-	2		A
V_{GM}	Peak gate voltage		-	5		V
P_{GM}	Peak gate power		-	5		W
$P_{G(AV)}$	Average gate power	over any 20 ms period	-	0.5		W
T_{stg}	Storage temperature		-40	150		˚C
T_j	Operating junction temperature		-	125		˚C

1 Although not recommended, off-state voltages up to 800V may be applied without damage, but the triac may switch to the on-state. The rate of rise of current should not exceed 6 A/µs.

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j\text{-}mb}$	Thermal resistance junction to mounting base	full cycle	-	-	2.0	K/W
		half cycle	-	-	2.4	K/W
$R_{th\ j\text{-}a}$	Thermal resistance junction to ambient	pcb (FR4) mounted; footprint as in Fig.14	-	75	-	K/W

STATIC CHARACTERISTICS

T_j = 25 ˚C unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.			UNIT
		BTA208S-			**...D**	**...E**	**...F**	
I_{GT}	Gate trigger current[2]	V_D = 12 V; I_T = 0.1 A						
		T2+ G+	-	-	5	10	25	mA
		T2+ G-	-	-	5	10	25	mA
		T2- G-	-	-	5	10	25	mA
I_L	Latching current	V_D = 12 V; I_{GT} = 0.1 A						
		T2+ G+	-	-	15	20	25	mA
		T2+ G-	-	-	25	30	40	mA
		T2- G-	-	-	25	30	40	mA
I_H	Holding current	V_D = 12 V; I_{GT} = 0.1 A	-	-	15	25	30	mA
V_T	On-state voltage	I_T = 10 A	-	1.3		1.65		V
V_{GT}	Gate trigger voltage	V_D = 12 V; I_T = 0.1 A	-	0.7		1.5		V
		V_D = 400 V; I_T = 0.1 A; T_j = 125 ˚C	0.25	0.4		-		V
I_D	Off-state leakage current	V_D = $V_{DRM(max)}$; T_j = 125 ˚C	-	0.1		0.5		mA

DYNAMIC CHARACTERISTICS

T_j = 25 ˚C unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.			TYP.	MAX.	UNIT
		BTA208S-	**...D**	**...E**	**...F**			
dV_D/dt	Critical rate of rise of off-state voltage	V_{DM} = 67% $V_{DRM(max)}$; T_j = 110 ˚C; exponential waveform; gate open circuit	30	60	70		-	V/µs
dI_{com}/dt	Critical rate of change of commutating current	V_{DM} = 400 V; T_j = 110 ˚C; $I_{T(RMS)}$ = 8 A; dV_{com}/dt = 20v/µs; gate open circuit	1.8	3.5	4.5		-	A/ms
dI_{com}/dt	Critical rate of change of commutating current	V_{DM} = 400 V; T_j = 110 ˚C; $I_{T(RMS)}$ = 8 A; dV_{com}/dt = 0.1v/µs; gate open circuit	3.5	4.5	5.5		-	A/ms
t_{gt}	Gate controlled turn-on time	I_{TM} = 12 A; V_D = $V_{DRM(max)}$; I_G = 0.1 A; dI_G/dt = 5 A/µs	-	-	-	2	-	µs

2 Device does not trigger in the T2-, G+ quadrant.

MECHANICAL DATA

Dimensions in mm

Net Mass: 1.1 g

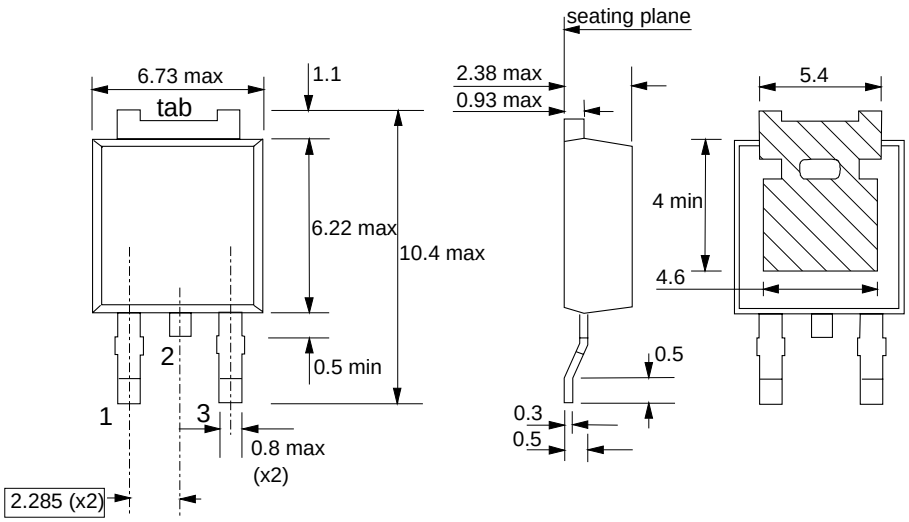


Fig.1. TO252 : centre pin connected to tab.

MOUNTING INSTRUCTIONS

Dimensions in mm

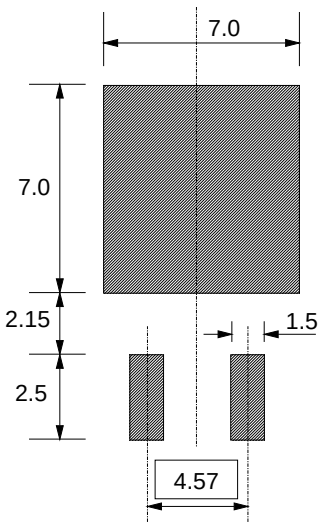


Fig.2. TO252 : minimum pad sizes for surface mounting.

Notes

1. Plastic meets UL94 V0 at 1/8".